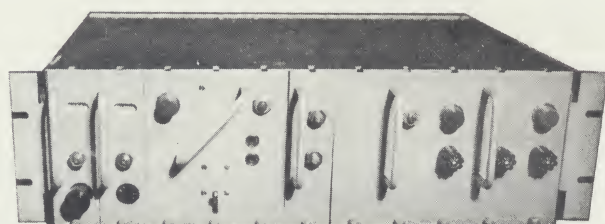




QOWR, RELAY STATION



QOWT, TERMINAL STATION

### QOWR — QOWT ORDER WIRE STATIONS

#### DESCRIPTION

The QOWR and QOWT Order Wire Stations provide for the transmission and reception of voice communication together with in-band signaling between terminals of a radio link. The QOWR is the Relay Station equipment and the QOWT is the Terminal Station equipment.

The QOWR provides communications separately or at the same time over links east and west of the station or, when desired, provides facilities for the relaying of information between stations east and west of the station.

#### FEATURES

- Completely solid state
- Provision for monitoring by means of two speakers (10 watt output)
- Automatic switchover to standby battery
- Voice filtering to prevent spurious ringing system "talk-up."
- Very low noise and distortion (see module specs on reverse side)
- Negligible cross talk
- Wide environmental range ( $-22^{\circ}$  to  $+140^{\circ}$  F)
- Simple installation, adjustment, and maintenance.

The QOWR is equipped with modular Telephone Panels, QTP, one for east and one for west, each containing a headset equivalent to W.E. Type 52AW and the necessary signaling pushbuttons and bells. As an optional item, QTE, Telephone Extension Panels, similar to and to operate in parallel with the QTP's can be furnished to provide extra telephone positions. A simple "Thru-Break" toggle switch determines whether the station will operate to relay information or whether the station will serve as the originator and receiver of information to east and/or west.

#### MODULE COMPLEMENT

QOWR	QOWT
2 QT-10	1 QT-10
2 QR-10	1 QR-10
2 QTP	1 QTP
2 QTE	1 QTE
4 QLA-1-2M	1 QLA-1-2M
2 QLC	1 QPA-10
1 QSU	1 QP-48R
1 QPA-11	1 QX-11 (Frame)
1 QP-48R	
2 QX-11 (Frame)	

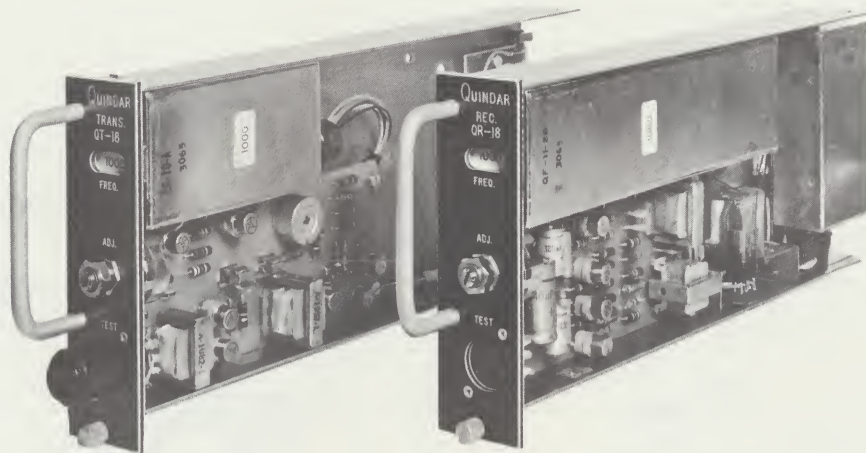
The QOWR requires two standard Quindar QX-11 Frames each 5-1/4" high x 19" wide x 13-3/4" deep for mounting in standard 19" relay racks. These dimensions include projection to front and rear of equipment handles and terminal blocks. All connections are made to screw type barrier terminal blocks.

The QOWT is similar to one half of the QOWR since it is a terminal station and only communicates in one direction. It does not have a "Thru-Break" switch and only requires one QX-11 Frame.

UNIT	DESCRIPTION	SPECIFICATIONS
QLC	The QLC, 4 way--4 wire bridge combines 4 balanced, 4 wire voice circuits and routes them to desired outputs with virtually no crosstalk to terminals at which the signal is not desired.	Input/Output Impedance: 600 ohms balanced Normal Input Level: +5 dbm Normal Output Level: -10 dbm Insertion Loss: 15 db $\pm$ 1db Crosstalk: Down at least 60 db between any two transmission paths and between any send leg and its conjugate receive leg.
QLA-1-2M	The QLA-1-2M consists of two independent audio amplifiers. Each has a separate level control, provides 39 db of gain, and has a maximum output of +18 dbm.	Frequency Response: $\pm$ 1db, 300 to 5000 cps Input/Output Impedance: 600 ohms, balanced Harmonic Distortion: At least 30 db down from +10 dbm test tone at 1000 cps. Noise: Less than 17 dba 0 Crosstalk between Amplifiers: -54 db max.
QPA-10 QPA-11	The QPA-10 and -11 are power amplifiers each capable of delivering 10 watts and arranged to allow operation of two monitor speakers. The QPA-10 is used in the QOWT Terminal Station. The QPA-11 is used in the QOWR Relay Station and therefore includes a hybrid which permits input from two sources with no interference from one to the other source.	Input Impedance: 600 ohms Load Impedance: Nominal 8 ohms Damping Factor: 10 Output Power: 10 watts Input for full rated power: No more than -30 dbm Frequency Response: 300 - 10,000 cps Distortion: Less than 1% at full output
QP-48R	The QP-48R, is a dual power supply providing 48 VDC and 12 VDC from a primary source of 115 VAC. It includes a monitoring relay which senses a loss of normal power and switches to standby battery. Lamp indication is provided for Normal or Standby.	Input: 115 VAC, 60 cps Output: 48 VDC $\pm$ 3V 12.5 VDC $\pm$ 0.5
QTP QTE	The QTP, Telephone Panel provides the headset, telephone circuitry, signaling button, call lamp, etc., for voice communication. It also includes a Band Elimination Filter to prevent signaling system "talk-up." The QTE is intended to operate in parallel with the QTP from a remote location. It provides the same functional facilities.	Headset: W. E. Type 52 AW or equivalent Elimination of 2600 cps: 50 db minimum Loss in pass band: Less than 0.5 db
QSU QT-10 QR-10	The QSU module serves to switch a QOWR from local to relay operation. The QT-10 is the ringing generator. The QR-10 is the ringing receiver. For further information on the QT-10 and QR-10 see Bulletins 1003 and 1004.	



## IN-BAND TONE RINGERS, QT-18 and QR-18



**QT-18**

### DESCRIPTION

The QT-18 is an AM tone ringing transmitter designed to generate in-band, interrupted tone ringing signals in response to a circuit closure at its "keying" terminals. The unit is of modular design intended for mounting within a standard Quindar frame such as a QX-11 or QX-3. All terminals are of the screw type, available at the rear of the module.

This ringing transmitter is completely solid state with a plug-in oscillator and line coupling network which determine operating frequency. The QT-18 can be furnished for bridging or with 600 ohm output impedance. The standard units use a 1000 cps ringing tone interrupted at 20 cps or a 500 cps tone interrupted at 17 cps. Any of the standard Quindar frequencies can be substituted for the 1000 cps or 500 cps. The interruption rate is internally adjustable from 17 to 20 cps. A front panel control provides adjustment of the output level. Also on the front panel is a test socket.

### SPECIFICATIONS

Output Level: +5 dbm max. continuously adjustable.  
 Output Impedance: 10K ohms or 600 ohms.  
 Keying Method: 1 dry contact closure (forms A). Keying current that flows through this contact is approximately 5 ma.  
 Interruption Rate: 17 or 20 cps adjustable by internal potentiometer.  
 Operation Temperature Range: -30° to +60° C.  
 Power Required: 12 V.D.C.  $\pm$  10%; 4 ma on standby; 15 ma. on transmit.  
 Weight: 2-3/4 lbs. including QO-10.

**QR-18**

### DESCRIPTION

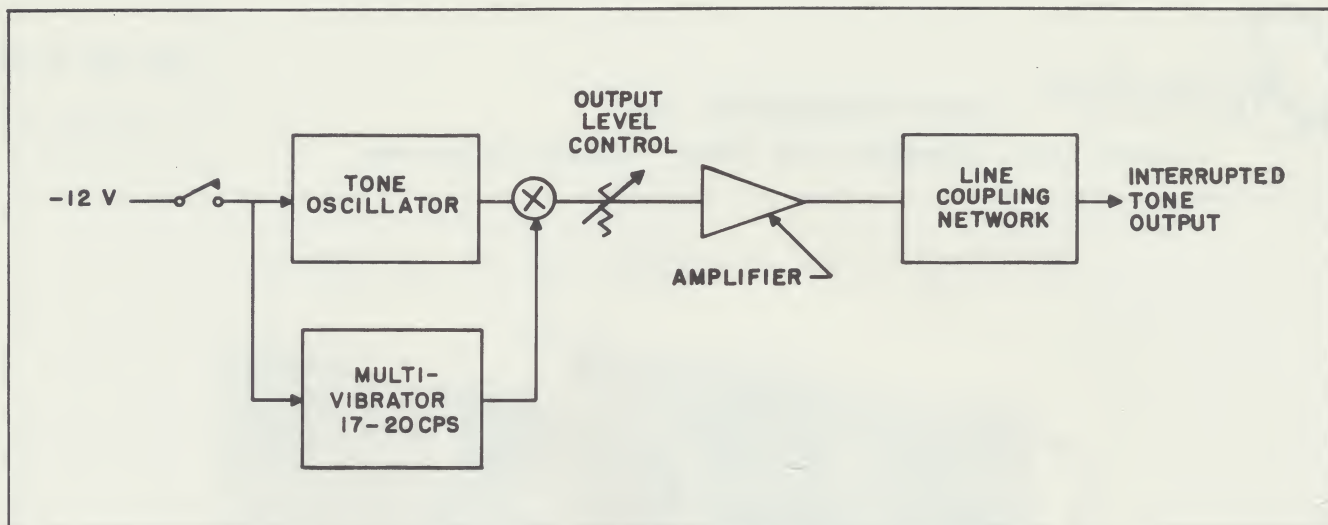
The QR-18 is an AM tone receiver designed to respond only to interrupted in-band tone ringing signals. The standard QR-18 is supplied for operation on a tone of 1000 cps interrupted at 20 cps or a tone of 500 cps interrupted at 17 cps. Two plug-in tone filters are available: a QF-11 and a QF-10. The QF-11 has a high input impedance (10K ohms) suitable for bridging across a telephone circuit. The QF-10 has a lower input impedance (600 ohms). Other combinations of tone frequency and interruption rate are available on special order. When the correct interrupted ringing tone is received, the QR-18 responds by closing its output relay which may be used to provide lamp indications or audible signal. The fact that both the tone frequency and the proper interruption superimposed upon it must be present before the QR-18 can operate reduces the possibility of "talk-up" to negligible proportions.

The primary tone frequency of the QR-18 is determined by the tuned plug-in tone filter, while the interruption rate to which the receiver responds is determined by the frequency of the plug-in interruption filter, QMF-20.

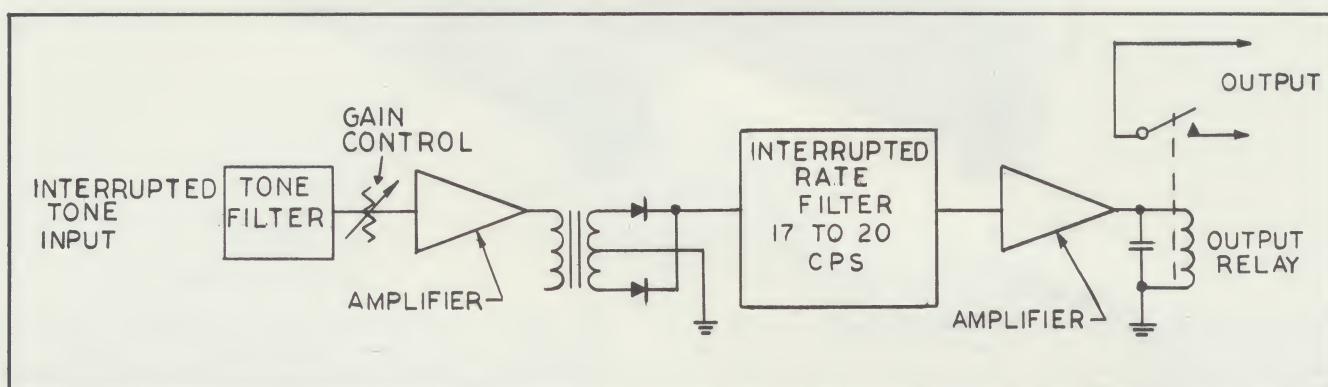
The unit is completely solidstate except for the output relay and is designed for mounting within a standard Quindar frame such as a QX-11 or QX-3. Output relay contacts (DPDT) are available as screw type terminals at the rear of the unit. A test socket and sensitivity control are provided on the front panel.

### SPECIFICATIONS

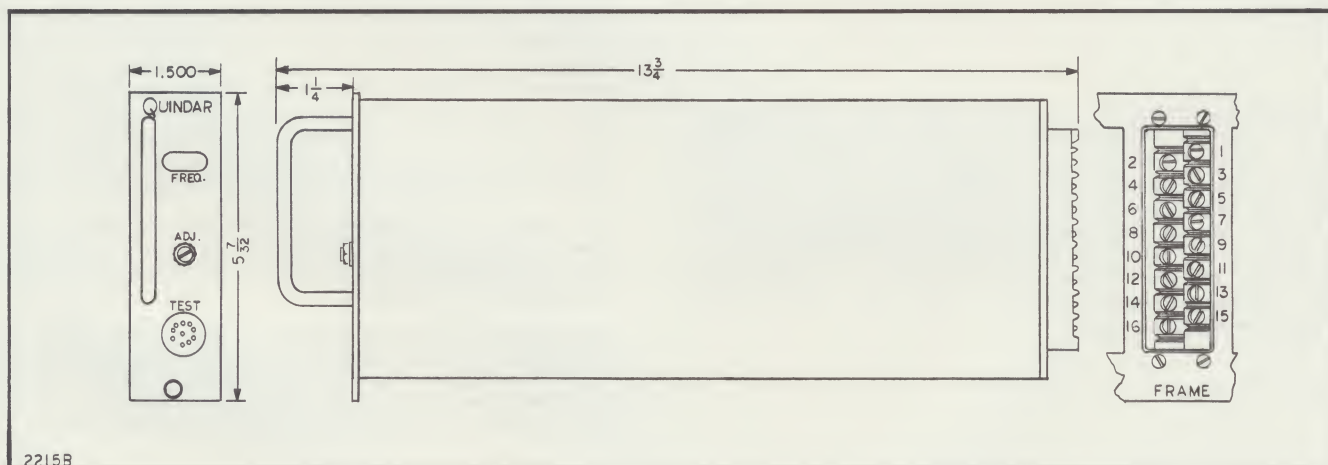
Operating Frequencies: 1000 cps interrupted at 20 cps or 500 cps interrupted at 17 cps; other combinations available on special order.  
 Sensitivity: QR-18 with QF-11 filter-adjustable to -18 DBM  
 QR-18 with QF-10 filter-adjustable to -30 DBM  
 Input Impedance: QR-18 with QF-11 filter - 10,000 ohms  
 QR-18 with QF-10 filter - 600 ohms  
 Output Relay: Double Pole, Double Throw, with contacts rated at 5 amps at 115 volts ac.  
 Operating Temperature Range: -30° to +60° C.  
 Power Required: 12 V.D.C.  $\pm$  10%; 75 ma receiving; 17 ma standby.  
 Weight: 4-1/2 lbs.



BLOCK DIAGRAM QT-18



BLOCK DIAGRAM QR-18



OUTLINE DIAGRAM, QT-18 & QR-18

## ORDERING INFORMATION

Order as: QT-18-X-Y-Z and/or QR-18-X-Y-Z.

X is tone frequency, either 1000 or 500 cps.

Y is interruption rate, either 20 or 17 cps.

Z is input/output impedance, specify 600 or 10K ohms.

If other combinations are required, consult factory. The mounting frame (such as QX-11, QX-3; see Bulletin 1001A) is not part of the QT-18 or QR-18.